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This article explores age differences in preferences for current health states, which is one way to measure trade-offs between "quantity of life" and the "quality" of those health states. Data are from 17,707 adult outpatients visiting 46 primary care, managed care practices. Patient preferences (utility) for their current health were assessed by standard gamble and time trade-off methods. Although older primary care patients' utility measurements for their current health were lower than other patient groups, most of the difference in value measurements was attributable to differences in health. Health providers should take care to assess individual preferences from all patients regardless of age.

Key Words: Utility, Quality versus quantity of life

Relationship Between Age and Patients' Current Health State Preferences

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Due to the increased life expectancy of adults in the United States, people are living longer, often with chronic conditions that affect their health-related quality of life. One goal of health care has been to treat illness and delay or avert death. However, as noted in a recent Institute of Medicine (IOM) report, increasingly "the goal of many older individuals and their families is not simply to add 'years to life' but also to add 'life to years' (IOM, 1996). Many older people do live healthy active lives, but older people on average are more likely than younger people to have multiple clinical conditions and a variety of physical and cognitive impairments (Rowe & Kahn, 1987; Stewart, Sherbourne, & Brod, 1996). As medicine deals with these chronic and degenerative diseases, patient preferences about the quality versus quantity of life become salient.

Recently, the assessment of health preferences, in addition to health status, has been advocated for use

in clinical decisions regarding treatment as well as in evaluations of the cost-effectiveness of policy options designed to create better health or maintain longer life (Gold, Siegel, Russell, & Weinstein, 1996; Siegel, Weinstein, Russell, & Gold, 1996; Weinstein, Siegel, Gold, Kamlet, & Russell, 1996). Individual decisions about treatment should be driven by patient preferences. Older individuals, like younger people, vary in their circumstances and their preferences for different health outcomes. These variations need to be understood and considered in order to assess whether an individual's desired health outcomes are achieved and to identify patients who would benefit from other interventions. A key issue is whether older people's preferences differ in some systematic way from those of younger people.

At the policy level, services for groups of people, like younger and older adults, compete with each other for a share of the health care dollar. It is important to identify whether the worth of health states (i.e., preferences or utilities) that are used in cost-benefit analyses vary by age. If they do, then a correction for age might need to be made when calculating utilities. This article explores age differences in preferences for current health states, which is one way to measure the trade-offs between "quantity of life" and the "quality" of those health states. It provides direct information on whether patients place a higher value on quality of life than length of life. In addition, we examine whether age differences found can be accounted for by varying levels of physical and mental health and chronic disease status.

Little is known about how health preferences vary as people age. What little evidence is available is mixed regarding whether characteristics of the rater influence value judgments. Medical knowledge or experience with an illness can influence subjects' valuation of health states such that they assign higher

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values to the state than the general public (Sackett & Torrance, 1978). However, reports of no differences among rater groups appear to outweigh those showing significant differences (Froberg & Kane, 1989a). Similarly, most studies have found no differences in preferences attributable to demographic characteristics such as age (Kaplan, Bush, & Berry, 1978; Rosser & Kind, 1978). One exception is a study by Sackett and Torrance (1978), who found that 6 of 15 health states were significantly associated with age, with older subjects reporting low preferences for dialysis and transplantation but higher preferences for hospital confinement for an unnamed contagious disease. Another exception is a study by Hays and colleagues (1996), who found that very old long-term care residents gave lower preferences for low Quality of Well-Being states, as defined by the Quality of Well-Being Scale (Kaplan & Bush, 1982), than the general population. However, many of these effects may be due to associations between health status and values (Dolan, 1996; Lenert, Treadwell, & Schwartz, in press), as opposed to a strict effect of aging. Findings are limited by inadequate power to detect differences or restricted samples. Larger studies are needed to increase confidence that preferences are not related to characteristics of the rater. To the extent that differences in preferences are found between different groups of patients, it may be necessary to customize therapeutic choices across these groups.

This study uses a utility approach to measure patient preferences and describes how patients' preferences for their current health state vary by age. In addition, it provides information on patients' attitudes toward risk. Utility methods allow us to make comparisons between different health conditions in terms of quality of life, which can then be used to estimate quality-adjusted life years. Unlike many other, often more sophisticated, utility assessments that ask people to imagine themselves in different states of illness and rate those health states (for a review see Nord, 1992), our approach uses ratings from a large representative sample of patients themselves. This can be considered the best source of information about the health-related quality of life associated with patients' current health states.

Methods

Study Design

This article uses survey data from Partners in Care, an Agency for Health Care Policy and Research-funded study of quality improvement for depressed patients in primary care, managed care practices (Wells, 1999). The study approached consecutive adult patients in primary care waiting rooms and asked them to complete a 10-minute survey that screened for common medical conditions and depression. This survey included two items designed to measure patients' preferences for their current health states. At this stage, informed consent was obtained from clinicians but not patients because no identifiable patient information was collected; this procedure was approved by the Human

Subjects Protection Committees of RAND and the study sites. The study was conducted in 46 primary clinics in California, Texas, Minnesota, Maryland, and Colorado. The clinics were drawn from multispecialty group practices, large staff or network model HMOs, and a public health system.

Screening occurred at each clinic over a 5–7-month period from June 5, 1996, to March 31, 1997. More than 44,000 patients were approached. Twenty-three percent of the patients were ineligible because they were younger than 18, not visiting a health provider that day, or had ineligible insurance. Another 6,600 (15%) refused to answer the survey. Of patients screened, 7,267 (27%) did not complete both utility items and another 1,087 (4%) completed only one utility item (both items were at the end of the survey). Nonresponse rates were higher for the two utility items because patients broke off to visit the clinician or leave the clinic. Only English-speaking respondents were included in this analysis because of multiple changes in the Spanish translation of the utility items. There were 17,707 patients in the final analytic sample. Patients who were not in the final sample, relative to completers, were significantly more likely to be older (51 vs 45), female (65% vs 63%), and not working (72% vs 58%). They were less educated (12.0 vs 13.9 years), more likely to be Latino (38% vs 16%), had less depression (24% vs 27%), more chronic disease conditions (1.74 vs 1.42), and had worse self-reported health status in general.

Measures

Utility.—There are several conceptual and technical approaches to measuring utility (Froberg & Kane, 1989a, 1989b). We used two conceptual approaches, the time trade-off (TTO; i.e., years of life an individual is willing to give up for perfect health until death, relative to 10 years in his or her current state of health) and the standard gamble (SG; i.e., the maximum risk of death an individual is willing to face for treatment that results in either complete cure of the condition or death). The standard gamble is theoretically the more correct measure but it is harder for respondents to understand than the time trade-off. Because there is no consensus on which approach is best to measure utility and different approaches can lead to different conclusions, we employed both and tested the sensitivity of our results by comparing results from the two methods. Alternative technical approaches to assess utilities include eliciting judgments to hypothetical scenarios in community respondents or obtaining current ratings of health from actual patients with different specific conditions of interest. Survey procedures range from self-report to multimedia interviews to improve comprehension and validity of assessment. To assess utilities in such a large sample, we assessed current utility from patients themselves using single-item measures of the SG and TTO.

For the TTO approach, patients were asked to imagine that there is a treatment that would permit them to live in perfect physical and mental health, but it would also reduce their life expectancy. Patients

were asked to indicate how many months or years they would be willing to give up for a treatment that would allow them to live in perfect health, if they had 10 years to live. Responses ranged from 0 to 120 months. Higher TTO scores indicate lower utility.

For the SG approach, patients were asked to imagine they had 10 years to live in their current state of health, both physical and mental, and that there was a treatment that could either give them perfect health or kill them immediately. Patients were asked to indicate what chance of success the treatment had to have before they would accept it. Answers ranged from 0 to 100%. Theoretically, patients in perfect health should indicate that the treatment must have 100% chance of success before they would be willing to take the treatment. Sicker patients should be more willing to take a chance of death with treatment. To facilitate comparison with TTO answers, responses to SG were transformed (by subtracting them from 100) to the percent chance of dying people were willing to accept to get to perfect health. Thus, higher SG scores also indicate lower utility.

One day test-retest reliability on a different sample of 228 patients showed a mean change of 2.04 months for TTO (95% CI, -4.86 to 0.78) and 0.03 percentage points for SG (95% CI, -0.007 to 0.07). Spearman's correlation coefficient between items at T1 and T2 was 0.79 for TTO and 0.69 for SG.

Health.—Health status instruments included (a) the SF-12, a widely used self-report measure of health-related quality of life (HRQOL), which is used to derive aggregate measures of physical and mental functioning and well-being (Ware, Kosinski, & Keller, 1996); (b) a single-item rating of overall health, based on a visual analogue scale ranging from 0 (worst possible health) to 100 (perfect health); (c) a count of number of chronic medical conditions (asthma; high blood sugar or diabetes; hypertension or high blood pressure; arthritis or rheumatism; a physical disability; trouble breathing; cancer diagnosed within the last three years; a neurological condition; stroke or major paralysis; heart failure or congestive heart failure; angina or coronary artery disease; other heart disease; back problems; stomach ulcer, chronic inflamed bowel; thyroid disease, kidney failure; trouble seeing; migraine headaches; Wells et al., 1989); and (d) probable depression. High probability of a current depressive disorder was assessed using five "stem" items from the major depression and dysthymia sections of the World Health Organization's (WHO) 12-month Composite International Diagnostic Instrument, Version 2.1 (CIDI 2.1; WHO, 1997). The positive predictive value of these five items in identifying subjects with 12-month major depressive disorder or dysthymia by the full CIDI is 55%.

Data Analysis

We used (a) descriptive statistics and unadjusted ANOVAs to describe the demographic and health characteristics of the sample by age group, and (b) Tobit maximum likelihood estimation regression

models to examine the relationship between age and health preferences. Tobit models were used because a high proportion of the patients responded that they were unwilling to gamble or trade-off any life for health; their observations had a value of 0 for the TTO and SG measures. The Tobit models assume that respondents have a normally distributed latent variable related to their willingness to trade-off or gamble life for health (Amemiya, 1985; Tobin, 1958). When that variable is negative, respondents are not willing to gamble. If positive, it reflects the number of months they would give up or the percent chance of death they would be willing to take for perfect health.

In the regression models, each type of utility measure (TTO, SG) was used as the dependent variable, and the main independent variables were dummy indicators for age. Eight age groupings were defined with ages 18–24 as the holdout group. Patient demographics (gender, education, marital status, ethnic group, site) and health (probable depression, number of chronic conditions, physical and mental functioning) were added to the models to test the moderating effects of demographics and health on the relationship between age and health preferences. Interactions between age and each covariate in the model were included in separate regression models to determine the extent to which the effect of age on health value varied by different patient characteristics. To illustrate results for each age group, we generated predictions of the observed TTO and SG values for each individual, using estimates from the Tobit models. Ordinary least squares results are similar and are available from the corresponding author.

Results

Patient Characteristics

The mean age of the 17,707 patients in the analytic sample was 45 with a range from 18 to 96. Thirty-seven percent were male; 69% were White, 3% American Indian, 7% Black, 3% Asian, and 17% Hispanic. The mean years of education completed was 13.9. Sixty-two percent were married and 72% were working full- or part-time. Table 1 shows demographic characteristics for eight different age groups. The youngest patients were less likely to be male or married and more likely to be Latino than other patients.

Health of the Sample

Table 2 shows unadjusted health scores for patients in eight different age groups. Presented are self-ratings of overall health, mean number of chronic medical conditions, and reported levels of physical and mental health. The mean number of reported chronic conditions increased significantly from youngest to oldest patients, and level of physical functioning (on a scale from 0–100 standardized to a general population mean of 50) decreased with age. Overall health ratings showed a decline with age (with ages 45–69 reporting similar health levels), while mental health was lowest in younger patients (aged 18–44).

Table 1. Demographic Characteristics by Age Group

	Age Group							
	18-24 (n = 1,576)	25-44 (n = 7,561)	45-54 (n = 3,780)	55-64 (n = 2,149)	65-69 (n = 1,057)	70-74 (n = 786)	75-79 (n = 464)	80+ (n = 334)
% Male	28	34	39	47	46	43	40	34
% Married	18	63	72	71	69	61	58	39
% White	57	64	71	72	78	83	84	83
% Asian	4	4	3	3	<1	1	2	2
% Black	6	8	8	10	6	3	3	2
% Latino	30	21	14	12	12	8	7	9
% American Indian	2	3	4	4	3	4	4	4
Mean education (years)	13.5	14.1	14.3	13.8	13.2	13.0	13.0	12.4

Attitude Toward Risk and Health-Related Quality of Life

Among all patients, the average months of life they were willing to give up for perfect health was 7.6 months (out of a maximum of 120). They were willing to take a 5.1% chance of death in exchange for perfect health. Most patients (69.9%) were not willing to give up any months of life or take any chance of death. Table 3 shows the percentage unwilling to give up months of life and the percentage unwilling to take any chance of death by age group. More risk takers were in the 18-24 age group on both the TTO and SG.

To see if patients unwilling to give up any months of life were in general healthier than those willing to give up some months of life, we examined health ratings for these people. Among patients who were unwilling to give up any months of life, the percentage rating their health as good to excellent was high and decreased slightly with age (93% for ages 18-24; 92% for ages 25-44; 88% for ages 45-54; 83% for ages 55-64; 81% for ages 65-69; 79% for ages 70-74; 72% for ages 75-79; and 71% for ages 80+). In contrast, among patients willing to give up some months of life, the percentage rating their health as good to excellent

was lower and also decreased with age (89% for ages 18-24; 82% for ages 25-44; 76% for ages 45-54; 70% for ages 55-64; 61% for ages 65-69; 57% for ages 70-74; 64% for ages 75-79; and 51% for ages 80+). Similar results were found for ratings of health in patients reporting their willingness or unwillingness to accept a treatment with some risk of death.

Moderating Effects of Demographics and Health

Table 4 shows the Tobit models for each of the utility measures, with age entered in the first model, demographics in the second, and health in the third. As seen in Table 4, age and demographic variables account for very little of the total R^2 . Health status accounts for most of the variance in both SG and TTO responses, although the total amount of variance explained is low, consistent with other studies, which have found small amounts of common variance between utility and HRQOL (Revicki & Kaplan, 1993).

Table 5 shows predicted values based on Tobit coefficients for the observed TTO (0-120) and SG scales (0-100), both unadjusted (Model 1) and adjusted for demographics and health (Model 3). For the TTO, the oldest patients initially have lower utility than other age groups, except for the youngest patients. They are willing to trade off almost one year of life (out of 10) for perfect health. The lower utility for the oldest

Table 2. Health of Respondents by Age Group (unadjusted results)

Age Group	Mean No. of Chronic Conditions	Overall Health ^a	Physical Functioning ^b	Emotional Well-Being ^b
18-24	0.70	77.4	51.7	48.7
25-44	0.97	75.7	50.0	48.9
45-54	1.59	73.8	47.5	50.0
55-64	1.96	72.8	45.7	52.3
65-69	2.18	72.9	44.4	53.6
70-74	2.59	71.0	42.2	53.0
75-79	2.67	71.0	40.4	53.3
80+	2.80	65.4	37.3	52.5

^aRating on a scale from 0-100 with 100 equal to perfect health.

^bNorm-based scoring to a general population mean of 50 with SD = 10.

Table 3. Percent of Respondents Unwilling to Risk Death or Give Up Life for Perfect Health by Age Group

Age Group	% Not Willing to Give Up Any Months of Life	% Not Willing to Take Any Chance of Death
18-24	73	77
25-44	81	80
45-54	80	78
55-64	83	80
65-69	84	83
70-74	81	80
75-79	79	82
80+	77	80
All Age Groups	80	79

Table 4. Unstandardized Betas From Tobit Models of Health Values on Age, Controlling for Demographics and Health

	No. of Months Willing to Give Up			% Chance of Dying Willing to Take for Perfect Health		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Age Group						
25-44	-20.35****	-12.97****	-19.53****	-3.99*	-1.48	-5.58**
45-54	-19.36****	-9.85**	-20.01****	0.26	3.04	-4.17
55-64	-25.63****	-16.20****	-24.47****	-1.22	1.28	-5.82*
65-69	-28.58****	-19.06****	-25.01****	-6.60*	-4.47	-10.40***
70-74	-17.31****	-8.26	-17.64****	1.55	3.61	-5.53
75-79	-13.92*	-5.87	-16.35**	-0.31	1.60	-8.29*
80+	-2.28	3.10	-12.20*	2.27	4.07	-8.61*
Demographics						
Male		3.27*	8.09****		9.12****	11.81****
Education		-0.22	1.31****		-0.006	0.89****
Married		-12.69****	-8.16****		-5.08****	-2.66****
Asian		14.58***	16.54****		8.81**	9.74***
Black		-8.49**	-5.90		-6.51**	-5.63**
Latino		7.29**	8.70****		-0.26	0.70
American Indian		6.56	0.46		6.32*	3.12
Health						
Physical health			-1.39****			-0.84****
Mental health			-1.77****			-0.86****
Depressed			4.72*			1.56
No. of chronic conditions			1.08			1.78****
Pseudo R ²	0.0018	0.0044	0.0274	0.0004	0.0032	0.019

Note. Six dummies for site are included in the second and third models, but are not presented in the table. $N = 16,908$.

* $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$.

patients, however, appears to be accounted for by health (i.e., the number of months willing to give up for perfect health decreases to 9 when health is added to the model). For the SG, the risk of dying the patient is willing to take for perfect health does not vary much across age groups (5-6%). In the adjusted models, however, the youngest age group (18-24) is significantly more willing to take a risk of death for perfect health than are the other age groups.

Variations by Patient Characteristics

Other variables related to utility were marital status, gender, education, ethnicity, and health. Men and

unmarried and more highly educated respondents were more willing to give up months of life and take a chance of death with treatment than were women and married and less educated patients. Asians (for SG and TTO) and Latinos (for TTO) had lower utility than Whites, whereas Blacks (for SG) had higher utility than Whites. Utility was higher in patients with better physical and mental health (for SG and TTO), less depression (for TTO), and fewer chronic conditions (for SG).

We tested the two-way interactions between age and each covariate (except for site) to see if the relationship between age and utility differed depending on demographic characteristics or health levels. First, we tested the set of interactions for each covariate (e.g., the set of seven interactions for each of the seven age group dummy variables by education, scored continuously). If the F test for the set of interactions was significant, then we looked at the significance of individual interactions within the set. Of the eight sets of interactions tested for SG, only two of the F tests were significant (age by gender, $F [7, 16876] = 2.44$, $p = .0171$, and by education, $F [7, 16876] = 2.28$, $p = .0205$). The difference in utility between men and women was less among patients aged 80 and older, whereas higher education lowered utility among patients aged 55-79. Only one of the eight sets of interactions was significant for the TTO (age by number of chronic disease conditions, $F [7, 16869] = 2.72$, $p = .0081$). The presence of increased numbers of chronic conditions appeared to lower utility among patients aged 25-74.

Table 5. Predicted Health Preferences by Age Group for the Observed Scores

Age Group	No. of Months Willing to Give Up		% Chance of Dying Willing to Take for Perfect Health	
	Unadjusted	Adjusted	Unadjusted	Adjusted
18-24	12.23	12.13	6.06	6.76
25-44	7.64	7.75	5.26	5.57
45-54	7.82	7.66	6.11	5.86
55-64	6.70	6.87	5.80	5.52
65-69	6.22	6.78	4.78	4.68
70-74	8.22	8.81	6.39	5.58
75-79	8.91	8.36	5.99	5.06
80+	11.63	9.22	6.55	5.00

Discussion

Although older primary care patients' utility measurements for their current health were lower than those of other patient groups when assessed using the TTO utility method, most of the difference in value measurements was attributable to differences in health. Other factors equal, health preferences did not vary much by age. For any given level of comorbidity, older individuals were not more willing to trade off length of life or risk of death to gain better health.

This finding is in contrast to the general view that older patients place a higher value than the general population does on improving quality of life than increasing length of life (IOM, 1996). However, it is consistent with other studies that have found no differences in preferences attributable to demographic characteristics such as age (Kaplan et al., 1978; Rosser & Kind, 1978). It is also consistent with a recent study of hospitalized patients aged 80 years or older that found few patients willing to trade off length of life to improve quality in their last days (Tsevat et al., 1998).

In this study of a relatively healthy outpatient population, we found few patients in any age group who were willing to trade off any length of life for quality of life. Seventy percent were unwilling to give up any months of life or take any chance of death for perfect health. Patients might have been willing to take smaller risks (e.g., between 0 and 1%), if given that option. An operation with a 1% risk of death is quite serious, for example, and the people who die are much sicker than the average respondent. For people in reasonable health, it is not irrational to keep that health rather than risking such a chance of dying. Our sample was in relatively good health. For example, physical functioning levels were about 2 points lower for patients aged 18–54 than age-adjusted U.S. population norms, but comparable for patients aged 55 and older (Ware, Kosinski, & Keller, 1995). Levels of mental health were equal to the United States adjusted general population norms for all age groups.

Similarly, for responses to the TTO, one month is a sizable part of 10 years (120 months). In future work on TTO, we suggest adding the option of giving up a certain number of days (less than 30) for good health. Adding the possibilities of lower probabilities to the SG (e.g., 0.1% or 0.01%) is less attractive as most people have a poor understanding of low probabilities (Slovic, Fischhoff, & Lichtenstein, 1982).

There could be a number of reasons for higher risk taking among patients aged 18–24. These patients may have been more willing to trade off years of life due to their differing perception of time. Ten years to an 18-year-old patient may seem longer than 10 years to a 50-year-old patient. In addition, although in principle standardized to a maximum of 120, responses of how many months they would give up may be confounded by the perception of actual years of life remaining, which would be longer for these young respondents. Given the same level of health, youths were also more willing to risk a dangerous treatment that could kill them immediately. Younger people in general may be less risk adverse to a variety of situations,

including other kinds of high-risk behaviors such as smoking.

Health preferences may be influenced by a variety of non-health factors that were not included in our model. We did find that married people were much less willing to gamble for better health. This may reflect the fact that married people are happier on average than those who are unmarried, and they have more current responsibilities. In the standard gamble, respondents are asked in effect how much of their current life they are willing to risk for improved health. Because the value of their current life depends on other factors besides health, those who feel they have more to lose will place a lower value on health improvements.

Lower utility, in general, was related to sickness (e.g., depression, poor mental and physical health, more chronic medical conditions). In addition, lower utility was related to being male, unmarried, more highly educated, and of Latino and Asian ethnicity in comparison to White. The importance of these factors to health preferences did not appear to vary much with age. Very few interaction tests were significant, and those that were could have been due to chance.

The amount of variance in health preferences explained by variables in the model including HRQOL was very low (about 3% or less), suggesting that there is much more in the patient's utility function than health as measured by the SF12 and our list of comorbid medical conditions. This lack of relationship is consistent with other studies that have also shown small amounts of common variance between utility and HRQOL (Revicki & Kaplan, 1993). Self-reports of HRQOL are subjective judgments that integrate information about health into overall ratings. In contrast, preference assessments may take into account not only one's assessment of current health but also non-health factors (e.g., ability to cope) and the social context in which the person lives (e.g., role responsibilities). Therefore, it may not be surprising to find that measures of HRQOL explain little of a person's preference for his or her current health state.

The study has several limitations. We used a self-administered paper-based approach; although there are advocates of more complex elicitation procedures, a recent study found results of a self-administered paper-based instrument to be reliable, valid, and comparable to those obtained from other assessment techniques (Albertsen, Nease, & Potosky, 1998). Utility measures are known to be sensitive to the procedures used for elicitation (Lenert, Cher, Goldstein, Bergen, & Garber, 1998). Thus, the results of this study may not be directly compatible with other studies, but they do provide a benchmark to compare values across age groups.

Second, unlike findings from utility measures based on hypothetical valuations (see review in Nord, 1996), we found fairly high clustering of patients' utilities—most were not willing to give up any months of life or take a chance of death with treatment. This was true even among some patients hypothesized to have low quality of life due to their chronic medical conditions. This in part reflects the effects of the procedure

used for utility measurement. Others have found that people will usually choose to remain in a less-than-perfect health state rather than risk ending up sicker or dead, and they may be unwilling to trade off any time even though they have a large number of symptoms related to their disorder (Tsevat et al., 1998). In addition, people with chronic conditions may adjust over time to long-term illnesses, rating their quality of life as good, even though they appear to have severe health limitations. Preliminary evidence of the validity of our items is supported by the finding that sicker patients had lower utility for their current health state.

Third, nonresponse on utility items was moderately high, and was greater for older persons and those with more severe chronic illnesses. In addition, we excluded from these analyses patients who completed the utility items in Spanish. Thus, we may have underestimated utility for older, sicker, and Spanish-speaking patients. Fourth, due to the small amount of variance explained by the models, these results may be less useful for predicting individual treatment decisions, but they may still be useful on a population level. Finally, there may also be biases in our results due to the use of a sample of patients limited to particular practices, as opposed to a general population. Our sample was limited to consecutive patients from representative primary care clinicians in selected sites. A consecutive patient sample overrepresents high utilizers and sicker individuals, which could inflate the estimated decrements in utility, especially for the younger patients. However, inclusion of managed care and public and private sectors as well as a diverse sample of minority groups with a wide range of ages and socioeconomic levels provides a good sample of primary care patients in nonacademic settings typical of those for which allocation decisions are a daily phenomenon.

The results have several implications for treatment. Clinicians should be aware that most patients may be unwilling to trade much time in their current state of health for perfect health, regardless of their age. Variation among patients is large, however, and health care professionals need to ask their patients about their health state preferences and their willingness to make trade-offs between types of treatment and health outcomes. Although it does appear that older adults, especially the old-old, are willing to trade more time for quality of life, most of the difference appears to be due to the fact that they are in worse physical health. These differences in health are likely due to a number of chronic medical conditions, many of which can be treated effectively if not cured. Physicians should approach their patients from a biopsychosocial perspective in the hopes of identifying opportunities to improve each individual patient's quality of life. A variety of methods, including the clinician's intuitive approach, may be needed to elicit patient preferences in order to ensure consistency of results. Health value assessment in the elderly population is important because elderly patients often receive less aggressive and less technologically advanced treatment (Hamel et al., 1996). Our results suggest that one should not assume that older patients necessarily prefer quality of life to

quantity of life, although they might if their health is poor. When making treatment decisions, health providers need to assess individual preferences from all patients regardless of age.

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